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Industrial Benefits

Offshore Oil & Gas

August 1983

Nova Scotia

Department of Development

Hon. Roland J. Thornhill, Minister

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Introduction

The Honourable Roland J. Thornhill
Nova Scotia Minister of Development

I am pleased to introduce this new edition of the Nova Scotia Benefits book. It contains the same kinds of information that were so well received by Nova Scotia businesses last year. The purpose of the book is the same: to introduce Nova Scotia businesses to the oil and gas industry and to tell them where the markets are and how to reach them.

The Venture Project, and the rapid changes that will occur during this development phase have led us to change the format of the book, to permit easier updating.

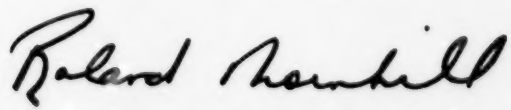
The first Nova Scotia Benefits Book responded to an immediate need in the Nova Scotia business community. Although the Canada-Nova Scotia Agreement had guaranteed Nova Scotia participation in the offshore industry, many people in the province were unaware of the products and services needed or how to sell their products to the oil and gas industry. The Nova Scotia Benefits Book gives them that information.

The Nova Scotia Department of Development's Industrial Benefits Office exists to ensure that Nova Scotians gain maximum advantage from the activity off our coast. To accomplish this end, the Department is ready and willing to assist any company wishing to establish a foothold in the market.

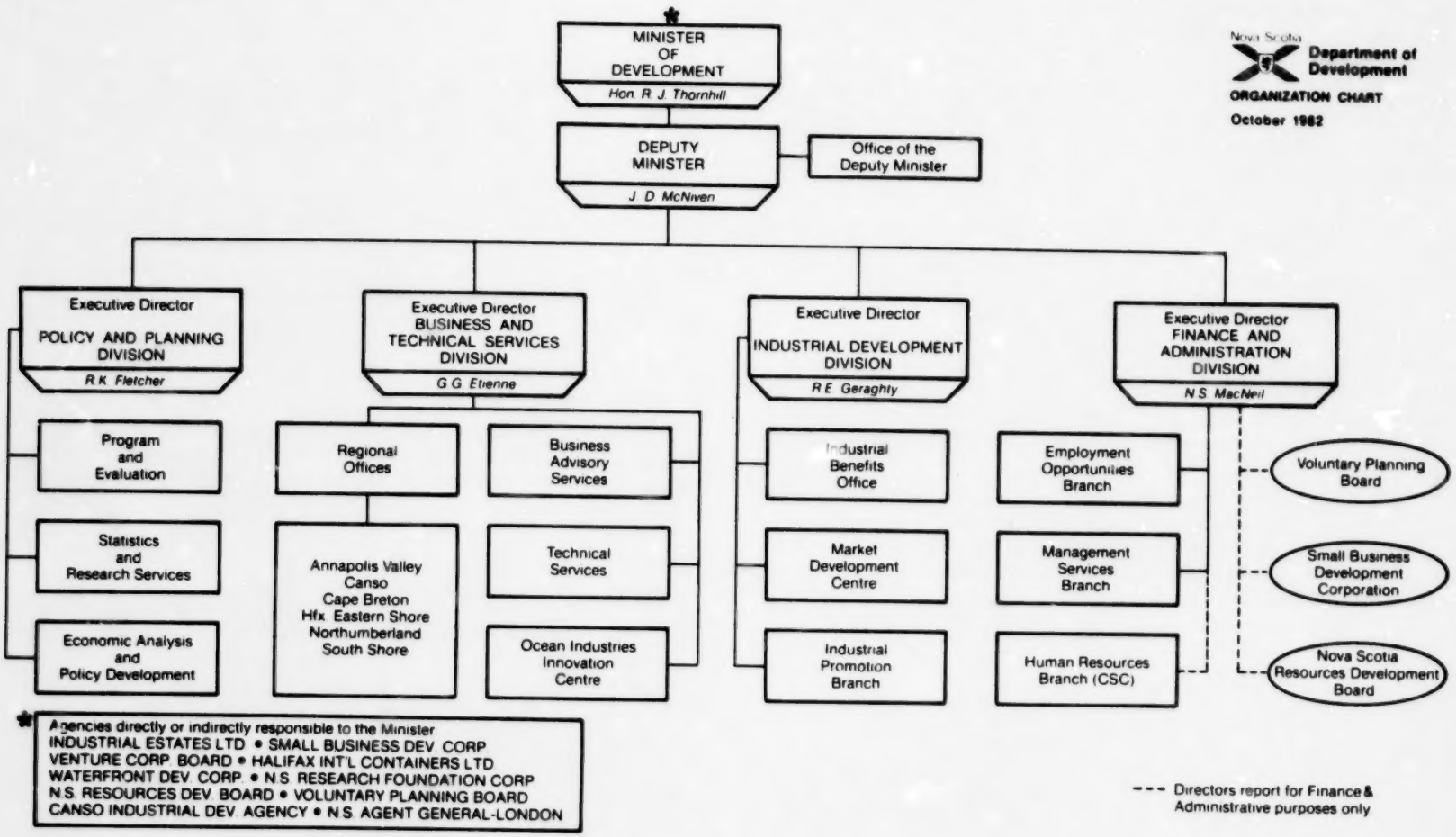
We will help you develop your products, on your own, or we can put you in touch with potential joint ventures. We will not sell your products for you. The oil and gas business is highly competitive, and the only way to operate in this industry is to be equally competitive, and competent.

Much of the capability needed already exists in Nova Scotia. In many cases, the capacity to fill one contract is shared among a number of companies. The Department of Development encourages businesses not to bypass a possible contract because they lack the ability to "go it alone". In most cases, the Industrial Benefits Office can complement your efforts. Cooperation among local companies can bring contracts to Nova Scotia that would otherwise go elsewhere, and the spinoff benefits will stay in the area to build a stronger, more competitive industrial base here.

The Nova Scotia Department of Development offers this book to local businesspeople with the assurance that the information will help them reach markets in the offshore industry to bring more benefits to Nova Scotia and Atlantic Canada.



Organizational Chart



Nova Scotia Department of Development

The Nova Scotia Department of Development was established in 1971 with the objective of creating an economic climate that fosters growth and development in the province. The benefits of such development to the people of Nova Scotia include job creation and improvements in income and quality of life.

The challenge facing the Department, as a result of petroleum and related activities, is to effectively manage the interaction between the companies operating in the Nova Scotia offshore and the Nova Scotia business community.

Spearheading the Department of Development initiatives related to major projects, and particularly energy related projects, is the Industrial Development Division. The Division consists of three branches. The Industrial Benefits Office and the Industrial Promotion Branch are described on the following pages. The third branch, the Market Development Centre, focuses on selling Nova Scotia products outside the province.

In addition to the Industrial Development Division, the Ocean Industries Innovation Centre provides assistance to small Nova Scotia businesses in medium to high technology ocean industries. Further information on this office can be found on page 8 of this publication.

The Regional Offices of the Department of Development are the points of contact between the private sector and the Department, and provide a focal point for the delivery of programs and services to businesses in Nova Scotia. A listing of the regional office locations is provided on page 9.

The Agent General in London, reporting to the Minister of Development, represents Nova Scotia in the United Kingdom, Europe, and the Middle East. The functions of these offices are described on page 11.

Industrial Benefits Office (IBO)

The IBO was created to help maximize the industrial benefits for Nova Scotia resulting from major industrial and energy projects. Such a mandate can cover a wide field, both in the types of projects and the terms of geographical area, whether in Canada or elsewhere.

It is impractical to cover the whole range of interests from the outset. Therefore, for the first period of its operation, the IBO is concentrating on the major oil and gas projects in the Nova Scotia offshore area.

Potential linkages between these projects and other major oil and gas projects in the Atlantic, sub-Arctic, and Arctic regions will be included to the extent that they might provide additional benefits for Nova Scotia industry.

The Industrial Benefits Office operates to:

1. promote business between Nova Scotia companies and offshore oil and gas companies by providing up-to-date information;
2. negotiate agreements that ensure maximum Nova Scotia content in offshore development;
3. inform Nova Scotia companies by providing status reports, lists of products, project details, and information about the oil and gas industry;
4. provide active liaison with industry and trade associations;
5. provide information on regulatory, planning, and advisory bodies within government, and to facilitate access to them;
6. monitor and evaluate resource-related business within Nova Scotia in order to maximize Nova Scotia content as negotiated in Canada Benefits Plans;
7. provide the same kinds of service on other large projects such as developments in coal, onshore pipelines, and tidal power.

Contacts may be made through the Regional Offices of the Nova Scotia Department of Development (see page 9), or

Richard M. (Rick) Butler
Director
5151 George Street, Suite 900
P.O. Box 519
Halifax, Nova Scotia B3J 2R7

Telephone: (902) 424-7780, 424-6754
Telex: 019-22548
Telecopier: (902) 424-5739
Cable: DEVNS

Industrial Promotion Branch

The Industrial Promotion Branch is directly responsible for encouraging new industrial investment in Nova Scotia by the formation and implementation of a promotional program. It identifies and attracts investments in new manufacturing and service sector operations, domestic or international, that could lead to job creation in Nova Scotia. The branch works with other federal and provincial agencies to coordinate industrial assistance programs to enhance the opportunities for investment in Nova Scotia. The branch also provides information for assisting investment decision. Such information includes labour availability and wage rates, land and building costs, energy and transportation costs, market data, and the availability of financing from public and private sources.

Thomas G. Merriam
Director
5151 George Street, Suite 900
P.O. Box 519
Halifax, Nova Scotia
Canada B3J 2R7

Telephone: 424-7660
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Ocean Industries Innovation Centre

The Ocean Industries Innovation Centre assists entrepreneurs and small business operators wishing to expand into medium-to-high technology activities. This assistance may be in the form of advice, or financial, or other support. Eligibility is restricted to ocean-related industries but does not include primary harvesting, processing, or boat or ship building.

Contacts may be made through the Regional Offices of the Nova Scotia Department of Development (see page 9), or

Ivor Harrington
Director
P.O. Box 519
5151 George Street
Halifax, Nova Scotia
Canada B3J 2R7

Telephone: 424-6764

Regional Offices - Nova Scotia Department of Development

Cape Breton

E. Alan MacDonald	General Manager	539-4768	Department of Development LHC Building, 295 Charlotte Street Sydney, N.S. B1P 1C6
William B. Butler	District Manager	564-8241	Department of Development LHC Building, 295 Charlotte Street Sydney, N.S. B1P 1C6

The Strait

Alexander Harris	General Manager	625-3200	Department of Development Professional Building Church Street Port Hawkesbury, N.S. B0E 2V0
James Johnson	District Manager	863-5707	Department of Development Antigonish Municipal Building 42 West Street Antigonish, N.S. B2G 2H5

Metro East - Telex 019 22548

Robert Hanna	General Manager	424-6767	Department of Development P.O. Box 519, 5151 George Street Halifax, N.S. B3J 2R7
Douglas Nicholson	District Manager	424-5690	Department of Development P.O. Box 519, 5151 George Street Halifax, N.S. B3J 2R7
Bill Oland	District Manager	424-5690	Department of Development P.O. Box 519, 5151 George Street Halifax, N.S. B3J 2R7

Northumberland - Telex 019 34587

Robert Baillie	General Manager	662-3339	Department of Development Administration Building Debert Air Industrial Park Post Office Box 100 Debert, N.S. B0M 1G0
W. Donald Cameron	District Manager	662-3339	Department of Development Administration Building Debert Air Industrial Park Post Office Box 100 Debert, N.S. B0M 1G0
Harold Ettinger	District Manager	667-3223	Department of Development Amherst Industrial Park Post Office Box 458 Amherst, N.S. B4H 4A1
Kenneth Gammell	District Manager	752-1011	Department of Development 169-175 Provost Street Maritime Building, Room 504 New Glasgow, N.S. B2H 2P9

South Coast

Mack Duffus	General Manager	543-9121	Department of Development Provincial Building, 99 High Street Bridgewater, N.S. B4V 1V8
Paul Wamback	District Manager	543-9121	Department of Development Provincial Building, 99 High Street Bridgewater, N.S. B4V 1V8
Peter Brett	District Manager	742-8404	Department of Development Provincial Building 10 Starrs Road Yarmouth, N.S. B5A 2T1

Valley			
Carl Cruikshank	General Manager	678-3386	Department of Development Industrial Park Mall Post Office Box 524 Kentville, N.S. B4N 3X3
Cecil Verge	District Manager	678-8456	Department of Development Industrial Park Mall Post Office Box 524 Kentville, N.S. B4N 3X3
Jerry O'Neill	District Manager	825-4545	Department of Development 131 Commercial Street Post Office Box 39 Middleton, N.S. B0S 1P0

Nova Scotia's Agent General

Nova Scotia's Agent General in London represents the province in the United Kingdom, Europe (where a subsidiary office is maintained in West Germany) and the Middle East, where a well known Kuwaiti group represents our provincial interests.

These offices, backed by a further specialist on Scandinavian business, promote trade for Nova Scotia companies and seek to attract investment into the province. Services provided include information on the Canadian and provincial legislation and regulations, as well as operational data (site costs, wages and salaries, raw material availability and price, transportation, energy supplies and specialist services).

The Agent General and his team provide the potential importer with references to Nova Scotia suppliers and inform him about further help available from the Market Development Centre of the Department of Development and from other specialist marketing officers (e.g. Department of Fisheries).

Industrial companies which have relevant skills and capital are encouraged to make full use of Nova Scotia investment potential, and to use the advisory and introduction services of the Department of Development. The latter prepares and implements detailed itineraries to assist incoming directors.

For the Nova Scotia company, the Agent General's Office also offers a wide range of information on business opportunities, joint venture partners, or possible licensors of new processes.

Relevant addresses are:
Mr. Donald M. Smith
Agent General of Nova Scotia
14 Pall Mall
London SW1Y 5LU

Tel. 01-930-6864
Telex: 915867 NOVA S G

Mr. W. A. Jaenike
Representative of the Nova Scotia Agent General
D-4300 Essen-Bredeney
AM Ruhrstein 10
P.O. Box 230280
Federal Republic of Germany

Tel: (0201) 410031
Telex: 8579732 JET D

Procurement Policies and Practices

Responding to federal and provincial initiatives to increase Canadian and Nova Scotia content in petroleum related activities, the resource companies have developed industrial, employment, and socio-economic policy statements. These statements are supported by procedures and practices, and are made available upon request to the public and to potential suppliers.

In addition, general policies and practices adopted by the company, specific initiatives, and statements of intent are negotiated in the benefits process outlined on page 13. Purchasing and supplier development policies identified in benefits plans include commitments to:

1. establish local offices;
2. inform local suppliers on industrial benefits policies;
3. conduct business seminars for local business;
4. study and list supply capability;
5. identify national and regional supply gaps;
6. provide design standards and specifications that maximize the opportunities of local and Canadian firms to bid;
7. make information available on tender procedures;
8. provide sufficient lead time for local firms to prepare bid documents;
9. develop bid packages compatible with local business capabilities, by breaking down large projects;
10. conduct pre-tender meetings;
11. provide debriefings for unsuccessful firms;
12. conduct plant visits and quality assurance inspections;
13. encourage the adoption of these policies and practices by affiliates, partners, and contractors.

If the oil companies are to implement their commitments to Nova Scotia and Canadian industrial benefits, they must be fully informed on the current capabilities of each Nova Scotia company that wants to participate in the offshore activity. Furthermore, the oil companies must be advised whenever an industrial firm changes its capability, merges, or develops expansion plans which are dependent upon obtaining orders from the oil companies.

The oil companies have generally gone a long way to obtain the necessary information. In spite of these efforts, some firms will be missed initially. To correct this situation, and to avoid its happening at all, several steps are recommended:

1. All interested firms should provide all the oil companies and their main contractors (as appropriate) with full written information including:
   - Company Name - including name of principals and management
   - Brief Company History
   - Description of Facilities - including physical plant, number of employees, and equipment capability
   - Complete Listing of Products and Services Offered
   - Financial Information - indicating stability and ability to perform
   - Recent Contracts - oil industry related.

   The IBO will provide updated lists of contacts in the oil industry.
2. A copy of the written information should be sent to the IBO.
3. The Department of Development will compile and maintain updated listings of all known industries interested in the offshore. The Ocean Industries Directory, and other specialized directories which may be compiled, will be made available to all known purchasing agents and to other interested parties.
4. Where appropriate, the IBO will draw to the attention of the oil companies, etc., changes in provincial industry that may make a significant contribution to participation by Nova Scotians.

Federal-Provincial Management of Offshore Resources

The Canada-Nova Scotia Agreement on Offshore Oil and Gas Resource Management and Revenue Sharing

Facilitating the exploitation of resources off Nova Scotia's coast is the Canada-Nova Scotia Agreement on offshore oil and gas resource management and revenue sharing, signed in March, 1982.

The 42-year Agreement establishes the Canada-Nova Scotia Offshore Oil and Gas Board, which will assume the direct management of offshore exploration and development through the Canada Oil and Gas Lands Administration (COGLA). It will also oversee the collection and administration of basic royalty and the Progressive Incremental Royalty (PIR), and will make recommendations on offshore legislation, regulations, and decisions. The Agreement also establishes responsibility for guidelines used in pricing, revenue sharing, and participation.

In addition to the Oil and Gas Board, the Agreement calls for establishment of a Canada-Nova Scotia Executive Committee on economic and social benefits. This committee will advise on objectives and methods for optimizing the economic and social benefits of offshore resource activity.

The Agreement has clearly identified the rules under which the petroleum industry will conduct offshore exploration and development, and has committed both the federal and provincial governments to facilitate development of the Venture Field.

Canada-Nova Scotia Benefits Plans

Under the terms of the Canada-Nova Scotia Agreement, resource companies negotiating exploration and development licenses with the federal and provincial governments must submit a Benefits Plan.

The Benefits Plan defines the exploration or development activity in terms of the expenditures expected to result from the program, the employment to be created, and the potential socio-economic implications. Employment and expenditures are translated into Canadian and Nova Scotia content commitments based on industry and government experience. The companies are committed to industrial and employment policies and procedures that optimize benefits to Nova Scotia and Canada.

Within the Benefits Plans are monitoring arrangements, including a review process for bids over $50,000 by the IBO, a review of designated items as negotiated by the federal government with input from the IBO, and an annual review of the exploration and/or development plans.

Benefits Plans

Industrial Benefits	Manpower Planning	Social Benefits
Procurement Policies & Statistics	Manpower & Employment Policies	Community Consultation
Supply Gaps	Employment Statistics & Forecasts	Social Program Related to Operations
Supplier Development Initiatives	Strategies for Training, Special Employment Program & Recruitment	Public Awareness Programs
Long Term Industrial Benefits		
Monitoring 1. Designated Items 2. $50,000 Plus Items		
Transfer of Technology		
Research & Development		

The Bid Monitoring Process

The oil companies plan to spend billions of dollars during the coming years in carrying out the various phases of their projects. The IBO will closely monitor the manner in which this money is spent and, where necessary, will initiate actions to correct deviations from declared objectives. Probably the most important part of this process is the continuing review of each company's purchasing intentions before an order is placed to ensure maximum benefits for Nova Scotia.

For all purchases in excess of $50,000, the procedure is as follows:

1. The company notifies the IBO of its intention to call for bids or proposals and gives a short description of the goods and services and an estimate of their value. The notification also gives the names of the firms from which the company proposes to request bids or proposals.
2. After clarifying any points, the IBO may request the company to add a number of Nova Scotia firms to the bidders list. The selection of any such names will be based upon IBO's knowledge of:
   a) firms in Nova Scotia believed to have the required capabilities, or have intentions of gearing up to the required capabilities;
   b) the level of Nova Scotia content in the goods or services offered by the firm.

   The IBO's response to the oil company's notification must be made within 48 hours, which in most cases will not allow time for IBO staff to make contact with potential Nova Scotia suppliers. This illustrates the imperative need for all industries to keep the IBO up to date on their intention.
3. After analyzing the bids, the oil company advises the IBO of the preferred bidder and provides reasons for the selection. The IBO has 48 hours in which to object, and will do so if there are grounds for feeling that Nova Scotia firms have not received fair treatment.
4. After clarification of all queries, the resource company proceeds with the purchase.

Subsequent to the placement of the contract, the Department of Development will make every effort to ensure that purchases made outside the province, or outside Canada, fulfill the benefits commitments made by the bidder.

The Department of Development conducts a regular review of industry purchases with the oil companies, and with service and supply companies to monitor Nova Scotia content, and to identify oportunities for Nova Scotia businesses.

What is Nova Scotia Content?

In considering Nova Scotia content, the IBO will give priority to the following criteria:

1. employment of Nova Scotia residents;
2. use of Nova Scotia products;
3. potential to improve the provincial industrial fabric, particularly in, but not restricted to, the advanced technology industries. Research and development potential will be given special weight;
4. portion of dollars spent that remains in the Nova Scotia economy;
5. degree and level of Nova Scotia participation at management level, and degree of operational autonomy;
6. level of firm's ownership by Nova Scotia residents.

Material and Service Requirements

Petroleum related activity can be categorized in three phases: exploration, development, and production.

A number of exploration techniques are used to discern the geological structures which could contain hydrocarbons. These techniques include magnetic, gravity, electrical, radioactivity, geothermal, geochemical, and seismic surveys. Exploratory drilling is the final exploration method and is used to determine the location and size of petroleum reservoirs. Exploratory drilling offshore is done from mobile rigs; the wells - including the casing - are abandoned on completion. Offshore exploratory wells on the East Coast cost between $35-65 million to drill, require from 4 to 8 months to complete, and require a crew complement of approximately 150-250.

Once a hydrocarbon discovery has been made, a number of appraisal wells are drilled to delineate the size and characteristics of the reservoir. The results enable the operating company and its partners to decide whether to commit a sizable investment to the development phase of the project.

If the potential justifies development, plans are prepared for the design and construction of all drilling and production platforms, storage facilities, loading systems, pipelines, compressors, and all installations required between the reservoir and the purchaser. The development phase - including design, construction, and installation of offshore and onshore facilities - may last from 5-10 years. It is a period of intense investment with a higher peak requirement for manpower, than the exploration and production phases.

The production phase of petroleum activity may last from 15 to 50 years, depending on the size of the reservoir. This phase involves the ongoing operation of offshore and onshore facilities, and generates a fairly constant demand for materials and services, as well as for employment.

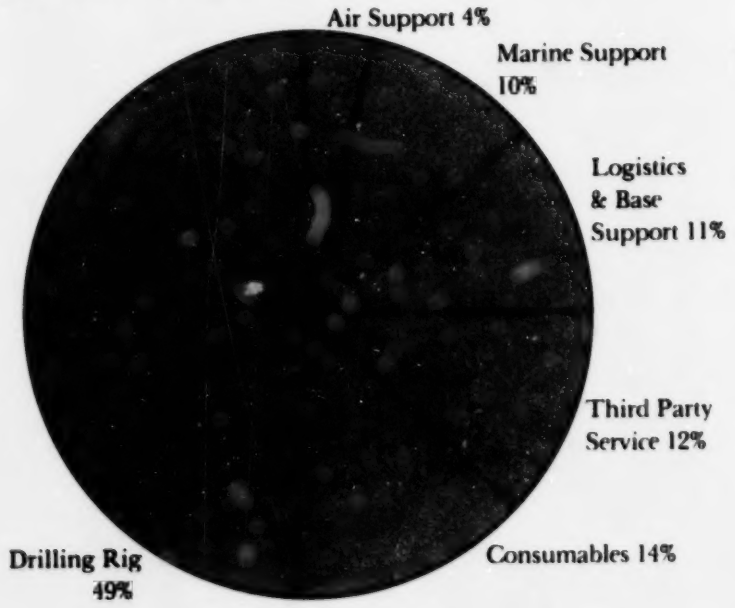
The material and service requriements associated with the three phases of petroleum activity are outlined in the following pages. In addition, the requirements for the overland transmission pipeline system have been included. Information on material and service requirements has been obtained primarily from petroleum industry publications, including those produced by Home Oil, Husky/Bow Valley East Coast Project, Mobil Oil, Nova Corporation, Petro Canada, and Shell Canada. In addition, *Scotian Shelf Gas Development: The Economic Impact on Nova Scotia, November 1981* was also used. A summary of these requirements is contained on the next page.

Summary

Goods & Service Requirements	Exploration	Development	Production	Transmission Pipeline
Batteries	X	X	X	X
Bearings		X	X	
Boats/Marine Installations	X	X	X	
Catering Equipment/Supplies	X	X	X	X
Chemical Compounds/Gases	X	X	X	X
Communications Equipment	X	X	X	X
Construction/Material Handling Equipment	X	X	X	X
Construction Material/Building Equipment	X	X		X
Drilling Equipment	X	X	X	X
Electrical Equipment	X	X	X	X
Electronic Equipment	X	X	X	X
Fasteners	X	X	X	X
Fuels/Lubricants	X	X	X	X
Gaskets/Seals	X	X	X	X
Instrumentation/Control Devices	X	X	X	X
Iron/Steel/Wire/Cable	X	X	X	X
Laboratory Equipment	X	X	X	X
Maintenance/Shop Equipment	X	X	X	X
Medical Supplies	X	X	X	X
Metallic Pipe/Tubing/Fittings	X	X	X	X
Non-Metallic Pipe/Tubing/Fittings	X	X	X	X
Office Equipment/Supplies	X	X	X	X
Paint/Protective Coatings	X	X	X	X
Pipe & Tubing Valves	X	X	X	X
Plant Equipment	X	X		X
Rope/Cord/Chain	X	X	X	X
Safety Equipment	X	X	X	X
Specialized Services	X	X	X	X
Tools	X	X	X	X
Transmission Pipe		X		X
Transportation Equipment	X	X	X	X

Exploration

Average Exploration Expenditures Per Well



Drilling Units

The drilling unit accounts for the single largest expenditure, in some cases up to 50% of the cost of an individual well. In addition, the drilling contractor employs approximately 75% of the crew and staff complement required to undertake the drilling program.

The drilling unit is usually owned and managed by a contractor and leased to the oil company, which is referred to as the "operator." The drilling contractor, in addition to managing the drilling unit, provides the majority of non-consumable equipment required to drill a well.

Material and service requirements include:

- automobile leasing
- blow-out preventors (BOP)
- bridles
- catering
- clamps
- cleaners
- diving equipment
- drill collars
- drill pipe
- drilling equipment
- electrical supplies
- fasteners
- fittings
- gauges
- hand tools
- hoses
- housekeeping services
- hydraulic fluid
- maintenance
- office rental equipment and supplies
- oil spill containment and recovery
- paint and paint supplies
- pennant lines
- rescue boats
- sample containers
- seals and sealants

ship chandlery
soaps and solvents
spare parts for drilling and marine equipment
subsea suits and life vests
welding and metal fabrication.

Support and Supply Vessels

Two to three vessels are required to service each offshore rig and are chartered directly by the oil company. The marine services contractor is responsible for transporting equipment and supplies from the shorebase to the rig, towing the rig between locations, and anchoring the rig at the wellsite.

Material and service requirements include:
anchors
cables
charts and publications
chemicals
dry docking services
fuels
housekeeping supplies
industrial supplies
life saving equipment
lubricants
machinery spares
marker buoys
protective clothing
repair and maintenance services
rope
shackles
ship chandlery.

Helicopters

Helicopters are used to transport crews and light weight equipment to and from the rig. One helicopter is usually contracted per drilling unit. The contractor provides both pilots and service personnel. The oil company provides hangar space and safety equipment for its employees and helicopters.

Material and service requirements include:
automobile maintenance
aviation fuel and lubricants
living accommodations
office supplies
transportation services.

Diving Services

The diving services contractor provides diving equipment (both manned and unmanned) and personnel capable of inspecting blow-out preventers on the sea floor. The tasks might also include specialized engineering and hyperbaric welding services.

Material and service requirements include:
abrasives
dry cell batteries
electronic and T.V. spares
engineering services
greases and oils
paints and primers
polypropylene rope
small tools
soda lime
stainless steel fittings and valves
T.V. maintenance and repairs
underwater electrical connectors
video tape
wire rope.

Cementing Services

The cement contractor provides bulk cement, cementing additives, and personnel on the rig to operate and maintain the cementing unit. Cement is pumped down the pipe or casing, out valves at the bottom of the string, and up the outside of the pipe to secure it in place, and protect the well from collapsing.

Material and service requirements include:
- bulk storage tanks
- laboratory supplies
- office equipment and supplies
- stock of cement onshore
- test lab
- transportation services
- warehouse.

Drilling Fluids Services

The drilling fluids services contractor provides services and supplies to produce a drilling fluid. Drilling fluid or mud is sent down the well on the outside of the drilling string, and is used to cool the drill bit, to carry cuttings to the surface, and to provide hole stability by balancing the fluid against the pressures at the bottom of the hole.

Material and service requirements include:
- barite
- bentonite
- bulk storage facility
- bulk tanks and trailers
- chemicals
- corrosion control products
- engineering
- high density materials and clays
- laboratory supplies
- office equipment and supplies
- test lab
- thinners
- transportation services
- warehouse
- weighing scales
- welding
- workover and completion fluids.

Mud Logging

The mud logging contractor provides geological engineering, monitoring, and data analysis as a continuous operation in a purpose-built unit on the drilling rig. Mud logging involves the recording of information about subsurface geologic formations by mud and cutting analysis.

Material and service requirements include:
- air freight
- electrical and electronic supplies
- mechanical supplies
- office space and equipment
- transportation.

Wireline Logging

Wireline logging services provide data for sub-surface structural mapping, identifies productive zones, and permits quantitative and qualitative interpretation of reservoir characteristics.

Material and service requirements include:
- cable conductors
- computer components
- crane and truck rentals
- data lines
- electronic supplies
- hand tools
- hydraulic and electrical supplies
- laboratory and test equipment
- magnetic tapes
- marine cables
- office supplies and equipment
- welding supplies and services.

Production Testing

Production testing may be broken into two contracts, one for down hole equipment and the other for surface equipment. The contractor provides personnel and equipment for flow testing the well.

Material and service requirements include:

fabrication facilities
fittings
flanges
hoses
machines shop services
office equipment and services
oilfield supplies
truck and crane rentals.

In addition to the foregoing, other services are required which may either be leased or purchased. Examples are:

1. Pipe inspection:
   - All casing is inspected prior to shipment to the drilling unit.
   - Drill pipe and drill collars are inspected at least once a year.
   - Inspection may include:
     - visual inspection of threads;
     - drift inspection to check minimum internal diameter;
     - ultrasonic and magnetic particle inspection for defects.
2. Casing running services
   - Provide men and equipment to assist in installing casing in the hole. Casing is run in 40-foot lengths, and is usually threaded together.
3. Directional drilling
   - Provide equipment and personnel to directionally drill a portion of the well.
4. Specialized drilling tools
   - Provide on a rental basis specialized drilling tools such as stabilizers, reamers, fishing tools, and drilling jars.
5. Medical services
   - Provide support to rig medic, and services onshore to rig and operator personnel.

Development Phase

Engineering and Project Services

A typical offshore gas development may require some 5,000 person years of engineering, requiring expertise in many diverse areas.

This input is supplied partly by the operating oil company, but primarily by contractor.

Material and service requirements include:

office space
equipment and supplies
drafting equipment and supplies
communications and transportation

Development Drilling

A development drilling program makes industrial demands similar to those which arise from the drilling of an exploration well.

Material and service requirements include:

catering
cement and chemicals
drilling rigs
fuel and lubricants
marine and air transport
mud
production testing
repair and maintenance
supply base
well casing
well logging and completion

Platform Fabrications

The platforms proposed for the Venture development are of conventional steel design, to be pile anchored to the ocean floor. From a structural perspective, the platform will include a lattice-type base referred to as the jacket, deck and top side facilities, and anchor piles.

Deck equipment construction can be done either by a modularized approach in which the production system is divided into a number of sub-systems, or by an integrated construction approach.

Material and service requirements include:

- compressors
- electrical and electronic control equipment
- flat steel
- generators
- heaters
- inspection and testing
- mechanical
- motors
- pumps
- safety equipment
- steel pipe
- telecommunications
- welding and metal fabrication.

Submarine Pipeline

An offshore pipeline is usually constructed by using a lay barge. The laybarge method includes all of the basic operations of pipeline construction on shore. Trenching is accomplished by dredging sleds and pipe trenching barges. Coatings which protect the pipeline and give it the required negative buoyancy must be intact after being lowered into the trench. Welding, coating of field joints, lowering the pipeline to the seafloor, and covering and checking it are the major operations. These require a small flotilla of survey, anchor handling, and pipe supply vessels to support the pipelaying activities.

Material and service requirements include steel for the pipeline and mastic and concrete for pipecoating.

Landfall Terminal

The landing terminal receives and separates the gas and liquids from the offshore pipeline and pumps the liquids and gas to the separation plant. The terminal includes a slug catcher.

Material and service requirements include:

- instruments used to clean and inspect pipeline
- metering and regulating instruments
- pressure control devices
- pumping facilities
- slug catcher
- steel pipe.

Overland Pipelines

Overland pipelines to carry gas and liquids from the landfall to the gas processing plant are constructed using conventional trenching and pipelaying techniques.

Materials and service requirements include:

- aerial photography
- aircraft and helicopters
- blasting
- brass
- cast iron
- cement
- clearing
- consumables
- copper
- design engineering
- dozers
- excavating
- first aid supplies
- fuel
- geotechnical and environmental studies
- lubricants
- maintenance vehicles and equipment
- office supplies and equipment
- paint

pipe bending and welding
pipelaying equipment
pipe steel
plastic culverts
power tools
pumps
rope
safety equipment
sand pipe coating and wrapping
shop supplies
steel pipe and coating materials
surveying
tools
trenching
trucking
valves
vibrators.

Gas Plant

The gas plant has two primary functions: to process the gas to a sales gas specification and to separate the heavier hydrocarbons.

Material and service requirements include:
building construction
compressors
electrical works
electronic and mechanical control equipment
hydrostatic testing
installation of skid-mounted mechanical equipment and instrumentation
insulation
plate and fabricated steel
pumps
site preparation and civil works
steel pipe
structural steel fabrication and erection
valves.

Production Phase

The transition from the development to the production phase is marked by a significant change in the nature and magnitude of industrial demands. Expenditures on goods and services are much lower and do not fluctuate significantly from year to year. A large proportion of the total expenditures is spent on wages.

Offshore Production Facilities

The operation and maintenance of the offshore platforms generate demands for a variety of consumable materials such as fuel, lubricants, paint, catering supplies, and replacement parts for machinery and equipment. Service requirements include inspection, maintenance, and repair of instruments, machinery, and the structures themselves.

Well Workers

Production wells must be maintained in order to ensure optimum flow conditions.

Material and service requirements include:
chemicals
fuel and lubricants
inspection
mud
testing and repair services.

Pipeline Inspection

The offshore pipeline requires considerable maintenance in order to ensure optimum performance. "Pigs" will be used for internal inspection, but submarine inspection using underwater cameras may also be required.

Landfall Terminal, Overland Pipeline and Gas Plant

Operational requirements will be related to the maintenance and repair of equipment and appropriate inspection.

Onshore Support and Transportation Services

The operation of offshore facilities will require a continuous flow of personnel and supplies. This requirement generates a demand for air and marine transportation services, and for material storage and trans-shipment facilities.

Natural Gas Transmission Pipeline

Prior to construction, National Energy Board (NEB) approval must be granted to the operator of the system. Engineering, environmental, and socio-economic studies must be completed as a part of the NEB application procedures.

The right-of-way for the pipeline is determined through a series of studies to ensure the route chosen takes into consideration the protection of natural resources and the socio-economic conditions in the area.

In operation, natural gas is pumped through the pipeline system in a gaseous state under pressure. Maintenance of the pipeline system is carried out on a regular basis by inspection and maintenance crews, aerial patrols, and yearly ground inspection.

Pipeline Construction

A variety of machines are used to dig the trench, usually of 1.5 to 2 metres across, in which the pipe is laid. Sections of pipe are transported to the site, and bent to fit the terrain and route requirements. Pipe sections are then welded and inspected. After welding, the pipe is cleaned, primed, and wrapped. Sand or granular fill protect the pipe, which is laid using tractors equipped with side booms. Once installed and pressure tested, the pipe is covered with subsoil and then topsoil. The land is then restored as nearly to its original state as possible.

Material and service requirements include:

aerial photography
aircraft and helicopters
blasting
brass
cast iron
cement
copper
design engineering
dozers
excavation
first aid supplies
fuel
geotechnical and environmental studies
lubricants
maintenance vehicles and equipment
office supplies and equipment
paint
pipe bending and welding
pipe steel
plastic culverts
power tools
pumps
rope
safety equipment
sand pipe coating and wrapping
seed and fertilizers
shop supplies
surveying
tools
valves
vibrators.

Compressor and Meter Station Construction

The speed and pressure of the gas flow is constantly monitored by computer and is controlled at compressor stations according to consumer demand. The quality and volume of natural gas is monitored by equipment in meter stations.

Meter and service requirements include:

- air compressors
- building materials
- chillers and condensers
- communications
- computer control systems
- conduct and fitting
- data logging systems
- dryers
- electronic and electrical equipment
- engineering supplies
- exhaust equipment
- fans and drives
- fire fighting equipment
- first aid supplies
- inlets and receivers
- instrumental panels
- mechanical maintenance
- office equipment and supplies
- pipe
- pipe support systems
- scrubbers and fittings
- shop supplies
- switch gearing
- testing and inspections
- transfer and control switches
- trucks
- turbines
- valves.

Construction Camps

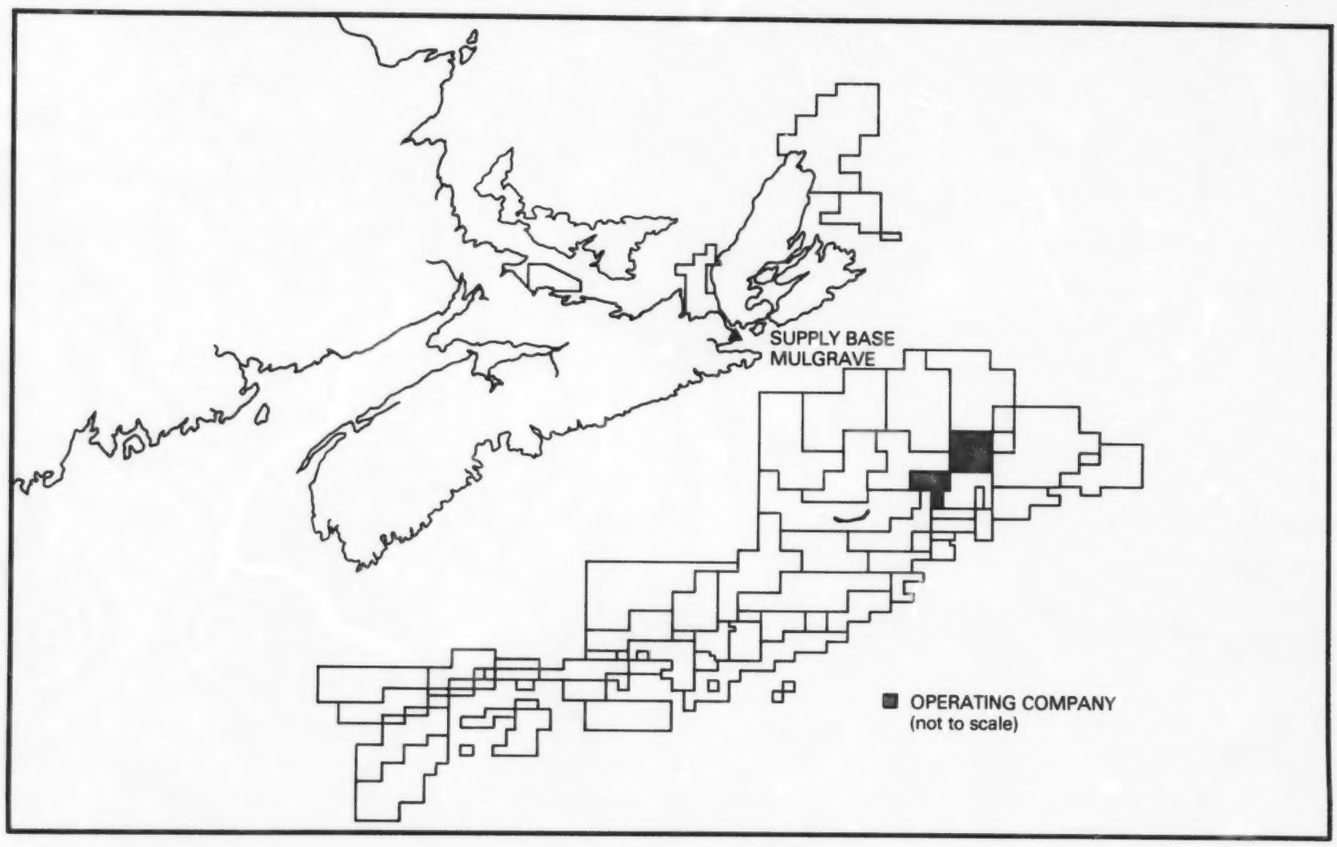
The number and location of construction camps is determined by the pipeline route and its proximity to a major labour force.

Material and service requirements include:

- access roads
- aggregate
- building equipment and supplies
- catering
- cement
- clearing and grading
- communications
- electrical supplies
- entertainment
- first aid supplies
- fuel
- generators
- hand tools
- maintenance
- mechanical equipment
- power tools
- safety supplies
- structural steel
- tires
- transportation
- warehouse supplies.

Home Oil

EXPLORATION



Corporate Background

Home Oil Company Limited is a wholly owned subsidiary of Hiram Walker Resources Ltd., primarily engaged in oil and gas exploration and development.

Home Oil was founded in 1925, and has a Canadian ownership rating of 83%. Home Oil, headquartered in Calgary, operates in Canada, and manages international operations in Australia, Indonesia, and Guyana. Home Oil also owns a majority of shares in Scurry-Rainbow Oil Limited, which controls Plains Petroleum Limited, and Federated Pipe Lines Ltd.

Home Oil has farmed-in on ESSO Canada Resources Ltd. lands in the Beaufort Sea and is now the operator. July 14, 1983 Home Oil announced a very substantial farm-in on Dome Petroleums Lands in the Beaufort Sea and in western Canada.

Nova Scotia Program

Home Oil will operate the exploration program on the Dome/Inco East Sable block. The programs, expected to cost $113 million, call for 900 km of seismic and 2 wells with the first well is to be spudded by the end of 1983. Home Oil will earn one-half of Dome's interest.

Procurement Practices

Detailed information on procurement policies and practices are available directly from Company personnel. Firms wishing to do business with Home Oil are advised to make an appointment, in advance. Completed vendor questionnaires should be directed to the company to ensure being included on the source listing.

Drilling Activity

Glomar Labrador I - Louisbourg 0-47 well water depth 66 m - to spud October 1, 1983 - expected to require 200 drilling days plus testing time.

Contact:

HOME OIL COMPANY LIMITED
714 Cogswell Tower
Scotia Square
2000 Barrington Street
Halifax, Nova Scotia B3J 2K1

Telephone: 421-1551

Mr. Roger Argument, Project Manager ,
Mr. John Anderson, Business Development Engineer
Mr. Jim Petty, Office Manager

Credit

Information contained in this document is based on information provided by Home Oil.

DOD August 1983

Home Oil

MAJOR CONTRACTORS

Drilling Rig

GLOMAR LABRADOR I (JACK-UP)
MARICAN OFFSHORE DRILLING INC.
9th Floor, Centennial Building
1660 Hollis St.
Halifax, Nova Scotia B3J 1VT

Telephone: 421-1123

Mr. Darrell Sonnier, Operations Manager

Catering (under contract to rig owner)

Under negotiation

Supply Base

Location - Mulgrave, N.S.

Labour - Under negotiation

Helicopter

ASSOCIATED HELICOPTERS
c/o IMP HANGER
Halifax International Airport

To be operational in October 1983.

Supply Vessels

2 Vessels
Under negotiations

Materials and Service Contractors

Cementing Services

- HALLIBURTON SERVICES
  30 Simmons Drive
  Dartmouth, N.S. B3B 1R3
  469-9755

Connectors

- VETCO OFFSHORE CANADA LTD.
  141 Joseph Zatzman Dr.
  Dartmouth, Nova Scotia B3B 1M7
  469-2198

Contigency Plan

- HARDY ASSOCIATES (1978) LTD.
  Suite 116, 900 Windmill Rd.
  Dartmouth, Nova Scotia B3B 1P7
  463-2486

Drilling Fluids

- NATIONAL MUD CONTROL LABORATORIES LTD.
  39 Gurholt Dr.
  Dartmouth, Nova Scotia B3B 1J8
  469-7793

Wellsite

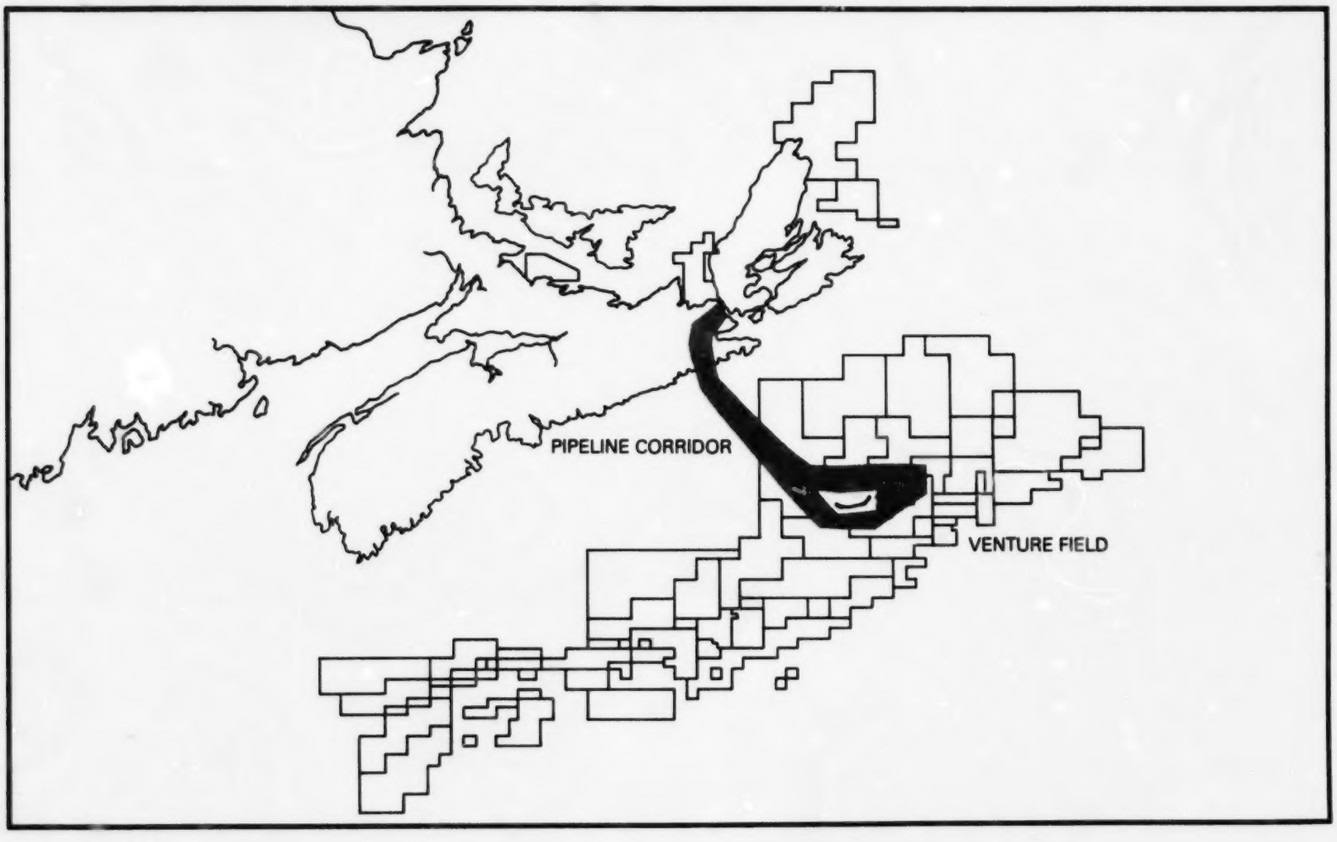
- D'EON MILLER AND ASSOCIATES LTD.
  1657 Barrington Street, Suite 416
  Halifax, Nova Scotia B3J 2A1
  422-4006

Services under Negotiation

Electric Logging
Mud Logging
Drilling Bits
Drilling Services
Rig Positioning
Diving
Weather
Tubulars

Mobil Venture Project

DEVELOPMENT



Venture Development

Mobil Oil Canada, Ltd., on behalf of its joint venture participants Petro-Canada Resources Inc., Texaco Canada Resources Ltd., Nova Scotia Resources Limited, and East Coast Energy Ltd., has begun the process of engineering and design for the development, and of obtaining regulatory approval to undertake development of the field.

In March, 1983, the Venture Development Project Environmental Impact Statement (EIS) and the Venture Development Project Socio-Economic Impact Statement (SEIS) addressing the anticipated impacts of the project were submitted to the federal/provincial review panels for approval.

A Concept Agreement has been submitted as the first phase of the process of receiving approval under the Oil and Gas Production and Conservation Act. The second phase involves the preparation and submission of a Development Plan. The Plan is scheduled for completion in January 1984.

To facilitate engineering, design, procurement, and eventually construction management, Mobil has assembled its Venture Project Development Team to be headquartered in Halifax. The team of over 100 professionals will be drawn from Mobil employees and from the Project Services Contractor (PSC). The Consortium of SNC/Fluor/Whitman Benn has been chosen as the PSC. The inclusion in the consortium of a Nova Scotian firm, Whitman Benn, is expected to increase the potential Nova Scotia content in the project and to enhance the long-term project management and engineering expertise resident in the Province.

Venture Field

EXPLORATION ACTIVITY: The Venture field is located 16 km east of the eastern end of Sable Island. Three holes have been completed, and a fourth, Venture B-52, is being drilled. The first well, D-23 completed to 4,945 m in May of 1979, encountered several gas bearing sandstones between 4,300 and 4,876 m that flowed at a combined rate of 1.23 x 10^6 m^3/d of gas and 103 x m^3/d of condensate. Venture B-13 (3 km northeast of D-23) was completed in May, 1981, to a depth of 5,354 m, and flowed gas and condensate from several zones totalling 2.25 x 10^6 m^3/d and 183 x m^3/d. A third well, B-43, was completed in April, 1982, to 5,872 m, with encouraging combined flow rates from 9 zones of 2,690,400 x m^3/d of gas and 334 x m^3/d of condensate. Three of the zones proved to have two additional reservoirs below those on B-23 and B-13.

FIELD DESCRIPTION: The Venture field covers an area of approximately 38 km^2 (15 mi^2). The water depth in the area is 22 m (72 ft.). Natural gas reserves in the field are estimated to be about 72 billion m^3 (2.5 trillion ft^3).

PRODUCTION: Gas production from the field will be approximately 11.3 million m^3 (400 million ft^3) per day with a total sales gas volume of about 10.2 million m^3 (360 million ft^3) per day. Production will begin to decline in the 16th year. The expected life of the field is 18 years.

Venture Project Description and Schedule

The Venture project description contained in the EIS identifies the following events and facilities as being required to complete the project:

1) **Development Drilling**
Raw gas production is projected to be at a rate of 400 to 333 million cubic feet per day or 11.3 million meters cubed from sixteen development wells. The development drilling is planned to start in late 1984, using jack-up drilling rigs over subsea templates.

2) **Gas Production**
Two self-contained platform complexes are proposed to produce the Venture field. Each complex will contain five structures: one wellhead platform, a production platform, an accommodation platform, a flare structure, and a compression platform. The structures will be bridge connected. Fabrication of the offshore platform components will begin in late 1984. The components will be transported to the offshore site for assembly beginning in 1986.

3) **Pipelines and Landfall**
Gas and natural gas liquids will be transported from the offshore platform complexes to shore in a single-flow, two-phase pipeline. The pipeline will be approximately 210 km long. A pipe-coating yard located nearby the landfall site will facilitate external concrete coating. The pipeline will be laid beginning in 1985, and will require two seasons to complete.
The landfall site will be located in the County Harbour area of Guysborough County. Facilities at the five-acre site will include a terminal and slugcatcher to separate the gas and liquids.
Two onshore pipelines, approximately 65 km in length, will transport the gas and liquids to the gas plant. Construction of the landfall terminal and pipeline is to begin in 1986.

4) **Gas Plant**
The gas plant will be located in the Strait of Canso area. It will be a self-contained facility, providing facilities for gas condensate separation, liquid stabilization and/or condensate fractionation. The plant will require approximately 360 acres of land. Construction is scheduled to begin in late 1984, with completion in 1987.

5) **Commissioning and Start-up**
Commissioning and start-up activities will begin in late 1987. Full production from the Venture field is scheduled to commence in 1988. The field life is anticipated to be 18 years.

Contact:

MOBIL OIL CANADA LTD.
Project Task Force
North American Life Bldg.
Ste. 300, 5300 George St.
Halifax, Nova Scotia B3J 3M3

Telephone: (902) 421-1420

Paul W. Fulton, Project General Manager
Andrew Budzinski, Engineering Manager
Len. J. Newman, Project Coordinator
D. Owen, Business Manager

SNC, FLUOR, WHITMAN BENN
Project Task Force
North American Life Bldg.
Ste. 300, 5300 George St.
Halifax, Nova Scotia B3J 3M3

Telephone: (902) 421-1420

C.N. Prescott, PSC Manager

Credit:

Information contained in this document is based on information provided by Mobil Oil

DOD August 1983

Venture Development Project

VENTURE CALENDAR

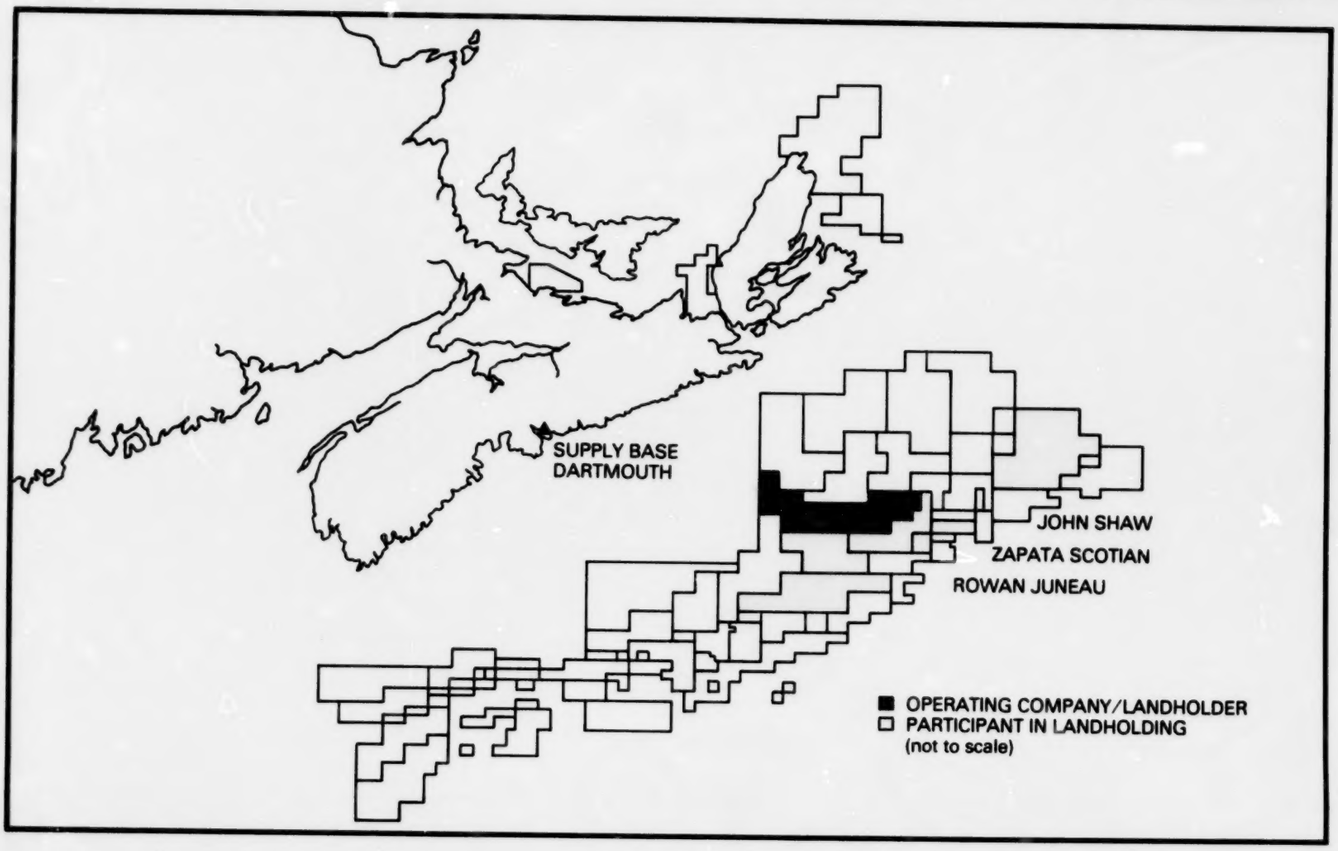
	1ST QUARTER			[redacted]RTER
1983		• Selection Project Services Contractor - SNC, FLUOR, Whitman Benn • Submission Environmental Impact Statement to Government		• Announcement results 4th delineation well Venture B-52
1984	• Approval EIS • Submission Venture Development Plan to Government	• Begin procurement program	• Begin Fabrication of wellheads • Government Approval Development Plan • Begin development drilling	• Construction of Gas Plant
1985		• Begin onshore preparation for offshore pipeline • Begin fabrication of platforms		
1986		• Completion platforms • Construction of Landfall Terminal and onshore pipeline	• Installation of offshore facilities	• Completion of Gas Plant
1987		• Completion development drilling	• Completion offshore pipeline • Commissioning and start-up	

Note: Illustrative Venture Development Plan based on information available August 1983

Weather Window [redacted]

Mobil Oil Canada

EXPLORATION



Corporate Background

For nearly forty years, Mobil Oil Canada, Ltd. has been an explorer and producer of crude oil, natural gas, natural gas liquids, and sulphur in Canada. For more than twenty years, it has been the lead company in exploring off Canada's East Coast.

Mobil is the operator for two major offshore discoveries: oil at Hibernia off Newfoundland, and gas at Venture off Nova Scotia.

Mobil has an enviable production record. It has ownership interests in 34 gas processing plants, four of them Mobil operated, and it operates two oil pipelines which move nearly 28,000 cubic metres of crude oil a day through more than 1,600 kilometres of pipeline. Production by the company averages about 12,000 cubic metres of oil and 7 million cubic metres of gas a day, as well as natural gas liquids and sulphur.

Mobil Oil Canada employs approximately 900 Canadians in British Columbia, Alberta, Saskatchewan, Nova Scotia, and Newfoundland.

Nova Scotia Program

Mobil was the first oil company to acquire exploration permits off the East Coast. Permits covering 1.1 million acres near Sable Island were granted in 1960. At that time, virtually nothing was known about the offshore geology. When Mobil drilled its first well in 1967, a primary objective was simply to test the thickness of the sedimentary section for hydrocarbon potential.

Of the 70 wells drilled to date by the oil industry, 30 have been drilled by Mobil and its partners in the Sable Island area.

The Sable Island Exploration Agreement was announced November 19, 1982, with Mobil Oil Canada as operator on behalf of its partners: Petro-Canada, Texaco, Nova Scotia Resources, and East Coast Energy. The eighteen-month agreement calls for four wells to be drilled for an estimated expenditure of $197 million.

The Banquereau and South Sable Exploration Agreements were also announced in November. Under the three-year Banquereau and four-year South Sable programs, Mobil, on behalf of its Banquereau partner, Texaco, has negotiated with the Husky/Bow Valley East Coast Project a farm-in arrangement to drill two wells on each block. Some 1,500 kilometers of seismic work will be undertaken. The total value of exploration expenditures for the two blocks will be $110 million.

Mobil Oil also holds an interest in the Shell Shelf exploration program. The total program is to cost $551 million.

Procurement Practices

Detailed information on procurement policies and practices are available directly from company personnel. Firms wishing to do business with Mobil Oil are advised to make an appointment. Completed vendor questionnaires should be directed to the company to ensure being included on the source listing.

Drilling Activity

ROWAN JUNEAU - VENTURE B-52 WELL
Spudded January, the 3rd Venture appraisal well

JOHN SHAW - BLUENOSE 2G-47 WELL
Spudded December (1982) on the Sable Island acreage

ZAPATA SCOTIAN - VENTURE H-22 WELL
Spudded July on the Sable Island acreage

Contact:

Mobil Oil Canada, Ltd.
Suite 1004, Bank of Commerce Building
1809 Barrington Street
Halifax, Nova Scotia B3J 3K8

Telephone: 423-9101

Mr. Stuart Aitken, Area Manager
Mr. Merv Graham, Drilling Superintendent
Mr. Kevin Baker, Logistics Coordinator
Mr. Don Payne, Purchasing Representative

Credit:

Information contained in this document is based on information provided by Mobil Oil.

DOD August 1983

Mobil Oil Canada

MAJOR CONTRACTORS

Drilling Rigs

Rowan Juneau (Jack-up)
ROWAN COMPANIES, INC.
277 Pleasant Street, Suite 307
Dartmouth, Nova Scotia B2Y 4B7
Telephone: 469-1973

Mr. George M. McGlocklin, Rig Manager
Mr. Robert M. Hattie, Materials Manager

John Shaw (Semi-submersible)
SONAT OFFSHORE CANADA LTD.
Suite 212, 11 Morris Drive
Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1K2
Telephone: 469-1980

Mr. H.E. Morton, Operations Manager
Mr. Karl Hawley, Materials Supervisor

Zapata Scotian (Jack-up)
ZAPATA OFFSHORE CANADA LIMITED
45 Alderney Drive, Suite 1680
Dartmouth, Nova Scotia B2Y 2N6
Telephone: 425-8780

Mr. Raymond Shows, Rig Manager
Mr. Kurt Zander, Materials Supervisor

Catering (under contract to rig owner)

UNIVERSAL SERVICES INC. (International)
10 Wentworth Street, Suite 4
Dartmouth, Nova Scotia B2Y 2S5
Telephone: 469-9874

(Rowan Juneau)

ARVAK OFFSHORE SERVICES
5121 Sackville Street, Suite 503
Halifax, Nova Scotia B3J 1K1
Telephone: 463-2408

(John Shaw & Zapata Scotian)

Supply Base

Location: - Dartmouth

Labour: - East Coast Oilfield
Service and Supply Ltd.

Helicopter

OKANAGAN HELICOPTERS LTD.
P.O. Box 483
Bedford, Nova Scotia B4A 2Y2
861-3747 or 861-3748

Supply Vessels

SEAFORTH FEDNAV (SEABASE)
5251 Duke Street, Suite 410
Duke Tower, Scotia Square
Halifax, Nova Scotia B3J 1P3
Telephone: 429-8970

VESSELS: - Seaforth Jarl
Seaforth Highliner
Stad Minerva

SABLE OFFSHORE SERVICES
5561 Morris Street
P.O. Box 310
Halifax, Nova Scotia B3J 2X1
Telephone: 423-6374

VESSEL: - c/o Hemisphere Shipping
Wimpey Seahunter

BALDER OFFSHORE CANADA INC.
1525 Birmingham Street
P.O. Box 3550 South
Halifax, Nova Scotia B3J 3J3
Telephone: 429-5680

VESSELS: - Balder Hudson
Balder Baffin

Materials and Service Contractors

Cementing

- DOWELL OF CANADA
1 Moore Road
Dartmouth, Nova Scotia B3B 1J1
468-1942

- HALLIBURTON SERVICES LTD.
30 Simmons Drive
Dartmouth, Nova Scotia B3B 1R3
469-9755

Coring

- ACC DIAMOND PRODUCTS
P.O. Box 1739
6632 - 44 Street
Leduc, Alberta T9E 2Z1
(403) 986-9600

Directional Drilling

- EASTMAN WHIPSTOCK CANADA
10 Micmac Boulevard
Dartmouth, Nova Scotia B3A 4N4
466-5328

Diving

- WOLF SUB OCEAN LTD.
55 Akerley Blvd.
Dartmouth, Nova Scotia B3B 1M3
463-8527

- LAVALIN OCEAN SYSTEMS LTD.
Suite 1020, Cogswell Tower
Halifax, Nova Scotia B3J 3K1
421-3200

Drilling Fluids

- SWACO
11 Morris Drive, Suite 118
Dartmouth, Nova Scotia B3B 1M2
466-5520

Electric Logging

- SCHLUMBERGER OF CANADA LTD.
42 Fielding Avenue
Dartmouth, Nova Scotia B3B 1E4
463-6580

Mud

- MAGCOBAR DRESSER CANADA INC.
75 Akerley Boulevard, Suite 4
Dartmouth, Nova Scotia B3B 1R7
469-8920

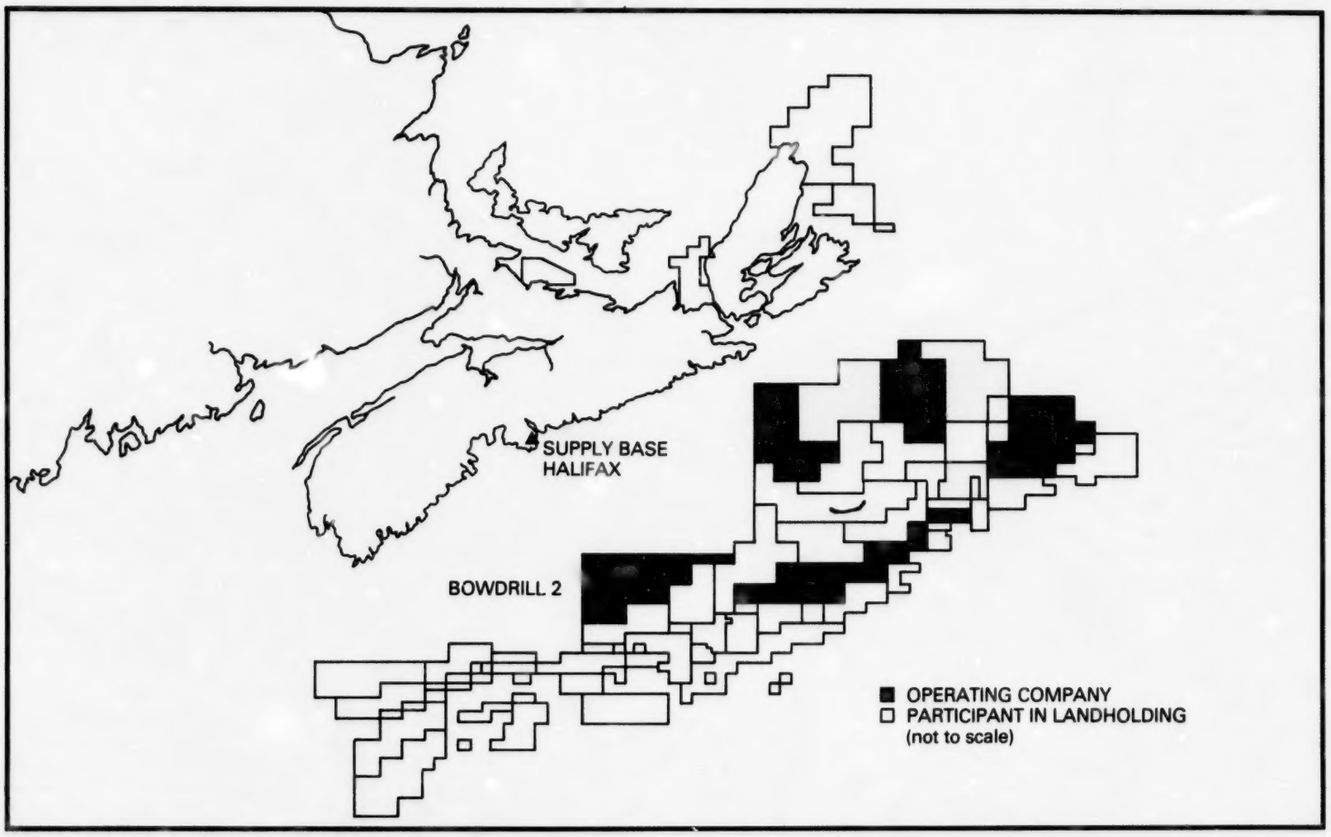
Production Test

- JOHNSON TESTERS
4 Beclin Industrial Park
St. John's, Newfoundland
(709) 368-8395

- OTIS ENGINEERING
110 Wright Avenue
Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1R6
469-5500

Husky/Bow Valley East Coast Project

EXPLORATION



Corporate Background

In late 1980 two Canadian companies, Husky Oil Operations Limited and Bow Valley Industries Ltd., joined forces to explore for oil and gas in Canada's East Coast offshore.

Husky Oil Operations Ltd. is a wholly-owned subsidiary of Husky Oil Ltd., the largest privately held, fully integrated petroleum company with a Canadian ownership rating in excess of 75%. NOVA holds 68% of Husky's common shares.

Bow Valley Industries Ltd. is a Canadian-owned and controlled resource company. The company's Canadian ownership rating is approximately 70%. A 78% owned subsidiary, Bow Valley Resource Services Ltd., provides drilling and manufacturing facilities to the natural resource industries.

The goal of the Husky/Bow Valley East Coast Project is to establish the companies as significant Canadian explorers and developers of offshore, East Coast Canada lands.

The Husky/Bow Valley East Coast Project has also contributed to Canadian offshore development by constructing two new semi-submersible drilling vessels valued at $300 million - Bow Drill 2 in Norway and Bow Drill 3 in Saint John. To support the rigs in offshore operations, six supply vessels (two built in Canadian shipyards) are being constructed.

Nova Scotia Program

Since 1981 Husky/Bow Valley have conducted or participated in approximately 10,000 km of seismic in Nova Scotia waters. This seismic will assist in delineating prospective structures, and firming up drilling locations.

The companies currently hold, or are entitled to earn working interests in the following acreage:

Onaping/Scotia Energy Resources - a farm-in on the Chebucto and Mobican blocks, calling for two wells to be drilled, one on each block and 100 km of seismic. Total cost of the program is estimated at $110 million.

Mobil's Banquereau and South Sable acreages - a farm-in which calls for two wells to be drilled one on each block, and 1500 km of seismic. Total cost of the program is estimated at $110 million.

Erie/Northeast Sable or Esperanto block held jointly with Petro Canada. Husky/Bow Valley will drill 4 of the 8 wells required under the agreement. The 8-well program, including 3,000 km seismic is projected to cost $500 million.

Banquereau acreage is not part of the companies' joint program, however, both Husky and Bow Valley have an interest in the Petro-Canada operated program.

Procurement Practices

Detailed information on procurement policies and practices is available directly from company personnel. Firms wishing to do business with Husky/Bow Valley are advised to make an appointment. Completed vendor questionnaires should be directed to the company to ensure being included on the source listing.

Drilling Activity

BOW DRILL 2 - GLOOSCAP C-63 WELL
Spudded August on the Mochican block.

Contact:

HUSKY/BOW VALLEY EAST COAST PROJECT
P.O. Box 2996, Armdale
Halifax, Nova Scotia B3L 4N5

Telephone: 453-4040

500 Clinton Building
2651 Dutch Village Road
Halifax, Nova Scotia

Mr. Larry Prather, Drilling Manager
Mr. Chris Bailey, Base Manager
Mr. Pat Hussey, Purchasing Representative

Credit:

Information contained in this document is based on information provided by the Husky/Bow Valley East Coast Project.

DOD August 1983

Husky/Bow Valley East Coast Project

MAJOR CONTRACTORS

Drilling Rig

Bow Drill 2 (Semi-submersible)

BOW VALLEY OFFSHORE DRILLING LTD.
5151 Terminal Road, Suite 402
Halifax, Nova Scotia B3J 1A1
Telephone: 421-3133

Mr. Ted Myers, Area Manager
Mr. Wayne Kelly, Materials Supervisor
Mr. Gary Foley, Operations Superintendent

Second Drilling Rig
currently under negotiation.

Catering (under contract to rig owner)

TAP CATERING INC.
Suite 812, Cogswell Tower, Scotia Square
2000 Barrington Street
Halifax, Nova Scotia B3J 3K1
Telephone: 422-8228

Supply Base

Location - Halifax

Labour - Halifax Offshore
Terminal Services

Helicopter

OKANAGAN HELICOPTERS LTD.
P.O. Box 483
Bedford, N.S. B4A 2Y2
861-3747 or 861-3748

Hanger - Halifax International
Rented I.M.P.

Supply Vessels

HUSKY/BOW VALLEY OFFSHORE
EXPLORATION SERVICES LTD.
3rd Floor Anchorage House
Historic Properties, Halifax
422-8475 or 422-8476
VESSELS: - Bonavista Bay
Placentia Bay
Gabarus Bay

Materials and Service Contractors

Cementing

- NOWSCO WELL SERVICES LTD.
9 Pettipas Dr., Burnside
Dartmouth, Nova Scotia B3B 1K1
463-8136

Communication

- T.D. COMMUNICATION LTD.
Bay H, 1007 - 55th Avenue N.E.
Calgary, Alberta T2E 6W1
(403) 274-4663

Coring

- UNITED DIAMOND DRILLING SERVICES LTD.
14 Flagstone Drive
Dartmouth, Nova Scotia B2V 1Z8
434-3213

Directional Drilling

- SPERRY-SUN OF CANADA LTD.
360 Astral Drive
Dartmouth, Nova Scotia B2V 1T4
434-9371

Diving

- WOLF SUB OCEAN LTD.
55 Akerley Boulevard
Suite 1, Dartmouth, Nova Scotia B3B 1M3
463-8527

Drilling Fluids

- MAGCOBAR DRESSER CANADA INC.
75 Akerley Boulevard, Suite 4
Dartmouth, Nova Scotia B3B 1R7
463-8015

- TECHNIFLUIDS LTD.
612-45 Alderney Drive
Dartmouth, Nova Scotia B2Y 2N6
469-8213

Electric Logging

- SCHLUMBERGER OF CANADA LTD.
42 Fielding Avenue
Dartmouth, Nova Scotia B3B 1E4
463-6580

Environment

- MARTEC LIMITED
5670 Spring Garden Road
Halifax, Nova Scotia B3J 1H6
425-5101

Geophysical

- GEOMARINE ASSOCIATES LTD.
5112 Prince Street
P.O. Box 41, Station M
Halifax, Nova Scotia B3J 2L4
422-6182

Inspection

- GUARDIAN INSPECTION ATLANTIC LIMITED
P.O. Box 390
Eastern Passage, Nova Scotia B0J 1L0
463-3491

Mud Logging

- EXLOG CANADA LTD.
50 Akerley Boulevard
Dartmouth, Nova Scotia B3B 1R8
465-2888

Navigation

- MCELHANNEY SERVICES LTD.
Suites 1 - 101 Thornhill Drive
Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1S2
463-0041

Oceanographic

- DOBROCKY SEATECH (ATLANTIC) LTD.
#23 - 16 Canal Street
P.O. Box 3060
Dartmouth, Nova Scotia B2W 4Y3
463-4099

Oil Spill

- SUPERVISORY CONSULTANTS LTD.
P.O. Box 88
Nisku, Alberta T0C 2G0
(403) 995-6411

Production Test

- OTIS ENGINEERING
110 Wright Avenue
Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1R6
469-5500

- JOHNSTON - MACCO
Division of Schlumberger Canada
75 Akerley Blvd., Unit C
Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1R7
463-6561

Quality Control

- HANSON MATERIALS ENGINEERING LTD.
7450 - 18th Street
Edmonton, Alberta T6P 1N8
(403) 464-7916

Radio

- ATLANTIC EXPLORATION SERVICES LIMITED
92 Ochterloney Street
Dartmouth, Nova Scotia B2Y 1C5
463-0176

Weather

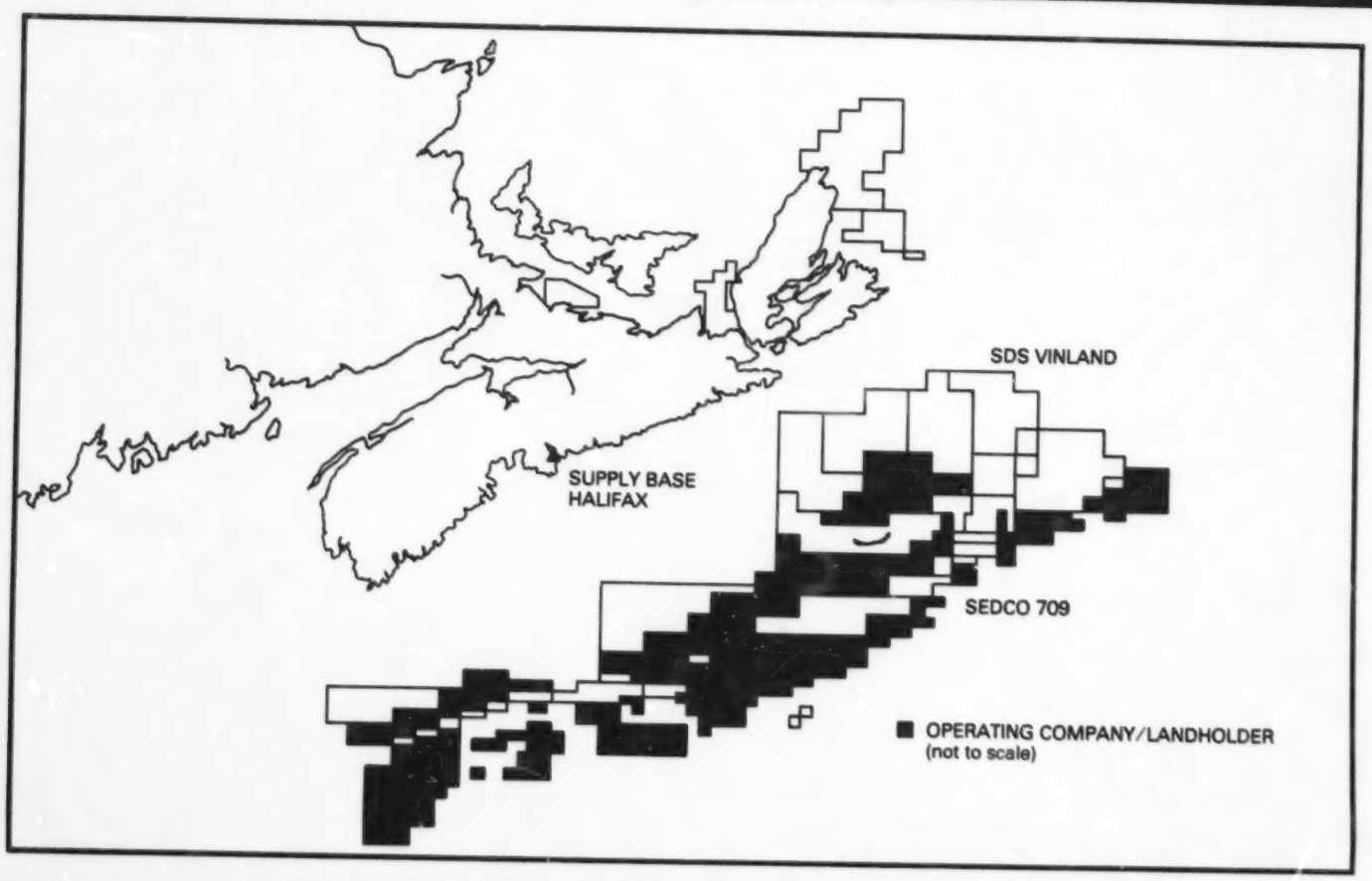
- MACLAREN PLANSEARCH LTD.
Suite 1020, Cogswell Tower
Halifax, Nova Scotia B3J 3K1
421-3200

Wellhead

- VETCO OFFSHORE CANADA LTD.
141 Joseph Zatzman Drive
Dartmouth, Nova Scotia B3B 1M7
469-2198

Shell Canada

EXPLORATION



Corporate Background

Shell Canada, with assets of $3.8 billion, is one of the largest integrated energy resource companies in Canada. It is managed and operated by more than 8,500 Canadians, and has been active since 1911.

Through its wholly-owned subsidiary, Shell Canada Resources, the company is engaged in exploration for and development of oil, natural gas and coal. It is a major producer in Canada of oil and natural gas liquids, the second largest producer of natural gas, and the largest producer of sulphur.

Shell Canada pioneered the construction of world class semi-submersible rigs in Canada, and of the seven semi-submersible offshore drilling rigs built in Canada to date, Shell was responsible for commissing four of them: Sedco F, Sedco H, Stadrill and Sedco 709.

Shell was also involved in the construction of three offshore work boats in Canada.

Nova Scotia Program

In 1969 Shell began an expensive drilling program in Nova Scotia's offshore in conjunction with marine seismic research. Over 25 wells were drilled in the early 1970's.

A renewed interest in new sources of hydrocarbons has intensified exploration activity offshore once again. Shell is currently acting as operator on two large exploration agreements.

The Shell Slope agreement calls for 10,000 km of seismic and 6 wells to be completed for a projected costs of $263 million.

The Shell Shelf agreement calls for 5,250 km of seismic and 9 wells to be completed, with estimated expenditures of $551 million.

Procurement Practices

Detailed information on procurement policies and practices are available directly from Company personnel. Firms wishing to do business with Shell Canada are advised to make an appointment. Completed vendor questionnaires should be directed to the company to ensure being included on the source listing. Canadian Industrial Benefits Questionnaire is required with bid documents.

Drilling Activity

SDS VINLAND - UNIACKE G-72 WELL
Spudded in May on Scotian Shelf Acreage

SEDCO 709 - GLENELG J-48 WELL
Spudded in February on the Shelf Acreage

Contact:

SHELL CANADA RESOURCES LIMITED
Queen Square, 18th Floor, Suite 1810
45 Alderney Drive
Dartmouth, Nova Scotia B2Y 2N6

Telephone: 463-8461

Mr. D. W. Dane, Drilling Superintendent
Mr. Roy Fodchuk, Coordinator, Logistics
Mr. John Cash, Senior Buyer
Mr. Laurie Taylor, Canada Benefits Officer

Credit:

Information contained in this document is based on information provided by Shell Canada.

DOD - August 1983

Shell Canada

MAJOR CONTRACTORS

Drilling Rig

SDS Vinland (Semi-submersible)

SDS DRILLING
Bank of Montreal Tower, Suite 1201
Halifax, Nova Scotia B3J 1M5
Telephone: 425-8630

Mr. R. Bradshaw, Drilling Superintendent
Mr. Joe Jellow, Materials Supervisor

SEDCO 709 (Semi-submersible)

SOUTH EASTERN COMMONWEALTH DRILLING LIMITED
Suite 308, Young Tower
6080 Young Street
Halifax, Nova Scotia B3K 5L2
Telephone: 453-0620

Mr. Vernon Greif, Operations Manager
Mr. Jim Johnson, Materials Supervisor

Catering (under contract to rig owner)

MAPLE LEAF CATERING LIMITED
P.O. Box 877, Station M
Halifax, Nova Scotia B3J 2W1
Telephone: 429-0856

SOUTH EASTERN COMMONWEALTH DRILLING LIMITED - SEDCO 709
Suite 308, Young Tower
6080 Young Street
Halifax, Nova Scotia B3K 5L2
Telephone: 453-0620

Supply Base

Location - Halifax
Labour - Halifax Offshore
Terminal Services

Helicopter

OKANAGAN HELICOPTERS LTD.
P.O. Box 483
Bedford, N.S. B4A 2Y2
861-3747 or 861-3748

Supply Vessels

SEAFORTH FEDNAV
5251 Duke Street, Suite 410
Duke Tower, Scotia Square
Halifax, Nova Scotia B3J 1P3
Telephone: 429-8970

VESSEL: - Seaforth Commander

BALDER OFFSHORE CANADA INC.
1525 Birmingham Street
P.O. Box 3550 South
Halifax, Nova Scotia B3J 3J3
Telephone: 429-5680

VESSELS: - Balder Borkum
Balder Hussum

CROSBIE OFFSHORE SERVICES
1000 Windmill Road, Suite 7
Mall I, Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1L7
Telephone: 465-2403

VESSEL: - OSA Ostend

Materials and Service Contractors

Cementing

- DOWELL OF CANADA
  1 Moore Road
  Burnside Industrial Park
  Dartmouth, Nova Scotia B3B 1J1
  463-1942

- NOWSCO WELL SERVICES LTD.
  9 Pettipas Dr., Burnside
  Dartmouth, N.S. B3B 1K1
  463-8136

Diving

- DOMINION DIVING LTD.
  145 Main Street
  Dartmouth, Nova Scotia B2X 1R6
  434-5120

Drill Bits

- SECURITY DIVISION - DRESSER CANADA INC.
  11 Morris Drive, Suite 118
  Burnside Industrial Park
  Dartmouth, Nova Scotia B3B 1M2
  463-6211

- SMITH TOOL - DIV. OF SMITH IND. CANADA LTD.
  75 Akerley Boulevard, Unit DD
  Dartmouth, Nova Scotia B3B 1R7
  463-3369

- WESTERN ROCK BIT CO. LTD.
  45 Wright Avenue
  Dartmouth, Nova Scotia B3B 1H1
  469-2668

Drilling Fluids

- BAROID OF CANADA LTD.
  P.O. Box 5039
  St. John's, Newfoundland A1C 5V3
  (709) 753-1600

- TECHNIFLUIDS LTD.
  612 - 45 Alderney Drive
  Dartmouth, N.S. B2Y 2N6
  469-8213

Drilling Tools

- CHRISTENSEN DIAMOND PRODUCTS (CANADA) LTD.
  67 Fireside Drive
  Dartmouth, Nova Scotia B2V 1Y7
  434-5565

- DRILL-RITE INDUSTRIES
  50 Akerley Boulevard
  Dartmouth, Nova Scotia B3B 1R8
  463-8237

- WEATHERFORD OIL TOOL CO. LTD.
  10 Thornhill Drive, Suite 1
  Dartmouth, Nova Scotia B3B 1S1
  463-2545

Electric Logging

- SCHLUMBERGER OF CANADA LTD.
  42 Fielding Avenue
  Dartmouth, Nova Scotia B3B 1E3
  463-6580

Forecasting

- MACLAREN PLANSEARCH
  Suite 1020, Cogswell Tower
  Halifax, Nova Scotia B3J 3K1
  421-3200

Mud

- MAGCOBAR DRESSER CANADA INC.
  75 Akerley Boulevard, Suite 4
  Dartmouth, Nova Scotia B3B 1R7
  463-8015

Production Test

- HALLIBURTON SERVICES LTD.
  30 Simmonds Drive
  Dartmouth, Nova Scotia B3B 1R3
  469-9755

- OTIS ENGINEERING CO. LTD.
  100 Wright Avenue
  Burnside Industrial Park
  Dartmouth, Nova Scotia B3B 1R6
  469-5500

Radio

- SCOTIAN CREWING & SUPPLY SERVICES
  1525 Birmingham Street
  P.O. Box 3550
  Halifax, Nova Scotia B3J 3J3
  429-5680

Sample Processing

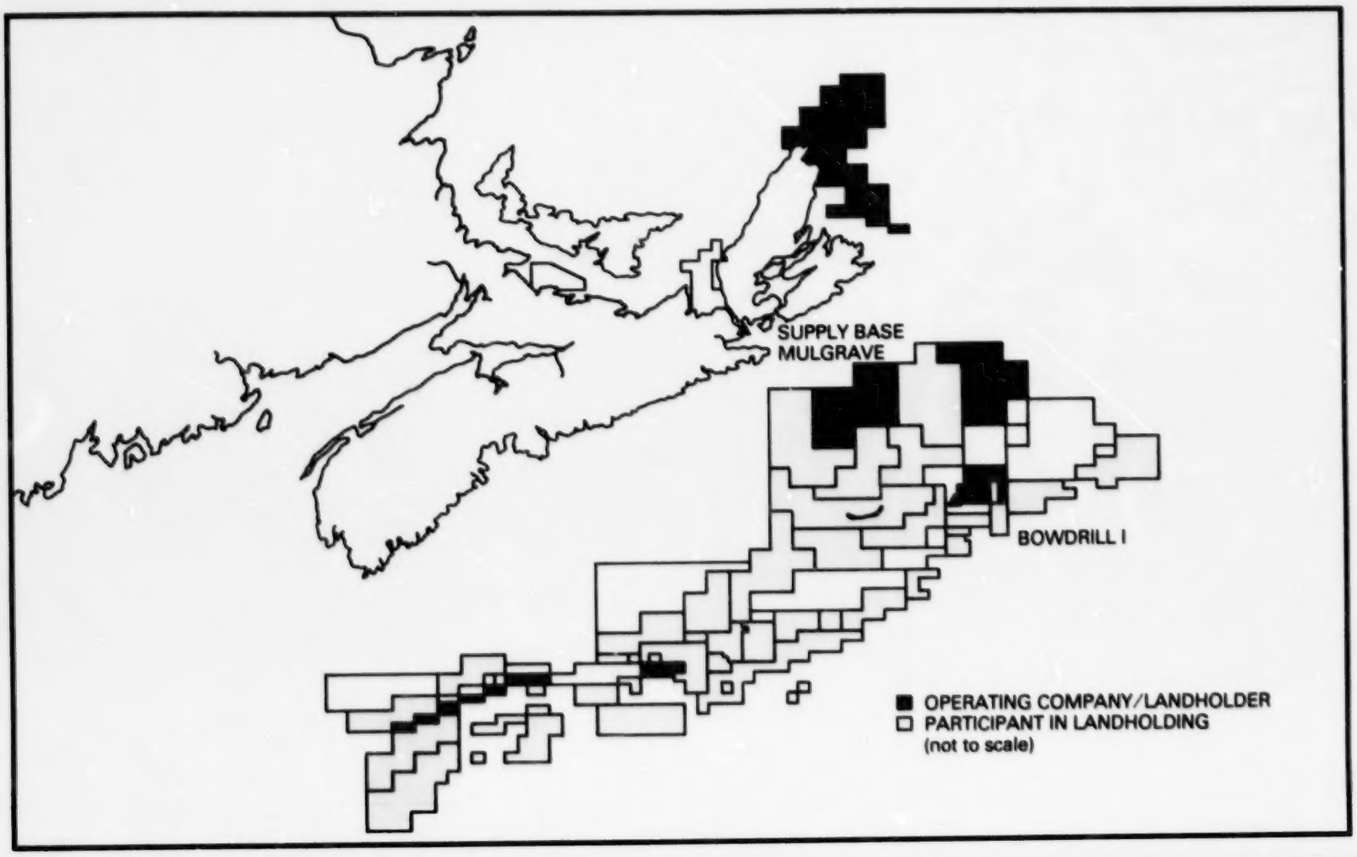
- HOMAC EXPLORATION SERVICES LTD.
  22 Waddell Avenue
  Dartmouth, Nova Scotia B3B 1K3
  463-0974

Survival

- MARINE EQUIPMENT LTD.
  Barrington Commercial Centre
  3695 Barrington Street
  Halifax, Nova Scotia B3K 2Y3
  429-3240

Petro-Canada

EXPLORATION



Corporate Background

Petro Canada is the only integrated Canadian energy company that is national in scope. Its 8000 employees conduct exploration, production and marketing operation whose current asset value, prior to the acquisition of B.P. Canada, Ltd., was approximately $7 billion. Petro Canada is Canada's seventh largest producer of oil, its third largest producer of natural gas, and the only Canadian company that markets petroleum products nationally.

Petro-Canada has been active in Nova Scotia since 1976 in a non-operating role. Through the position of a minority partner, Petro-Canada has earned a working interest in nearly all of the discovered reserves in the offshore areas, and specifically, the Venture area.

Nova Scotia Program

Since 1976, while interests were earned on farm-ins on Mobil and Shell-held lands, Petro-Canada's exploration investments represented 70% of the total industry expenditures on the Scotian Shelf.

Petro-Canada is currently involved as operator on:

Erie/North East Sable or Esperanto block in partnership with Husky/Bow Valley. Petro Canada will drill 4 wells on 2 of the four blocks included in the agreement. Total value of the jointly operated 8 well program, including 3000 km of seismic, is $500 million.

Maritime District Exploration Agreement package currently under negotiation includes Banquereau Block (represented in the first offshore land position acquired by Petro-Canada in 1981), Cabot Strait acreage, Sydney Basin and Western Shelf.

In addition to its operating position, Petro-Canada holds an interest in the $263 million Shell Slope agreement, the $557 Shell Shelf acreage and the Mobil Sable Island acreage where the Venture natural gas field is located.

Procurement Practices

Detailed information on procurement policies and practices is available directly from company personnel. Firms wishing to do business with Petro-Canada are advised to make an appointment. Completed vendor questionnaires should be directed to the company to ensure being included on the source listing. Should further evaluation be required, potential suppliers will be asked to complete a Canadian Industrial Benefits Questionnaire.

Drilling Activity

BOW DRILL I - S.W. BANQUEREAU F-34 WELL.
Spudded February on the Banquereau Block

ST. PAUL P-91 WELL.
is expected to be spudded September on the Cabot Strait acreage

Contact:

PETRO-CANADA
6th Floor, Bank of Montreal Building
5151 George Street
Halifax, Nova Scotia B3J 1M5

Telephone: 425-8640

Mr. Rod McGrath, General Manager
Mr. Harlow Rud, Drilling Manager
Mr. Peter Smith, Logistics Superintendent
Mr. Ian Richardson, Purchasing Supervisor
Mr. R.A. MacKay, Manager of Regional Affairs

Credit:

Information contained in this document is based on information provided by Petro-Canada.

DOD August 1983

Petro-Canada

MAJOR CONTRACTORS

Drilling Rig

Bow Drill 1 (Semi-submersible)

BOW VALLEY OFFSHORE DRILLING LTD.
5151 Terminal Road, Suite 402
Halifax, Nova Scotia B3J 1A1
Telephone: 421-3133

Mr. Ted Myers, Area Manager
Mr. Wayne Kelly, Materials Supervisor
Mr. Gary Foley, Operations Superintendent

Catering (under contract to rig owner)

TAP CATERING INC.
Suite 812, Cogswell Tower, Scotia Square
2000 Barrington Street
Halifax, Nova Scotia B3J 3K1

Telephone: 422-8228

Supply Base

Location - Mulgrave

Labour - Eastern Offshore Services

Helicopter

SEALAND HELLICOPTERS LTD.
P.O. Box 190
Enfield, Nova Scotia B0N 1N0
861-4113

Supply Vessels

BALDER OFFSHORE CANADA INC.
1525 Birmingham Street
P.O. Box 3550 South
Halifax, Nova Scotia B3J 3J3
Telephone: 429-5680

VESSEL: - Balder Cabot

WOLF OFFSHORE TRANSPORT
55 Akerley Blvd.
P.O. Box 605
Dartmouth, Nova Scotia B2Y 3Y9
Telephone: 463-8527

VESSELS: - Sea Wolf 101
Sea Wolf 102

Materials and Service Contractors

Cementing

- DOWELL OF CANADA
1 Moore Road
Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1J1
463-1942

- HALLIBURTON SERVICES
30 Simmons Drive
Dartmouth, Nova Scotia B3B 1R3
469-9755

- NOWSCO WELL SERVICE LTD.
9 Pettipas Dr., Burnside
Dartmouth, Nova Scotia B3B 1K1
463-8136

Directional

- SPERRY-SUN OF CANADA LTD.
360 Astral Drive
Dartmouth, Nova Scotia B2V 1T1
434-9371

Diving

- H.M.B. HYDROSPACE
Nord Building Vanguard Court
P.O. Box 13187
St. John's, Newfoundland A1B 4A1
(709) 726-4300

Drilling Fluids

- TECHNIFLUIDS LTD.
612 - 45 Alderney Drive
Dartmouth, Nova Scotia B2Y 2N6
469-8213

Electric Logging

- SCHLUMBERGER OF CANADA LTD.
42 Fielding Avenue
Dartmouth, Nova Scotia B3B 1E4
463-6580

Geophysical

- GEONAUTICS LTD.
P. O. Box 851
Dartmouth, Nova Scotia B2Y 3Z5
463-4884

Mud

- MAGCOBAR DRESSER CANADA INC.
75 Akerley Boulevard, Suite 4
Dartmouth, Nova Scotia B3B 1R7
469-8920

Mud Logging

- ANALYSTS OF CANADA, THE
P.O. Box 850
Mount Pearl, Newfoundland A1N 3C8
(709) 364-2312

Navigation

- MCELHANNEY OFFSHORE SURVEYS LTD.
Suite 1-101 Thornhill Drive
Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1S2
463-0041

Production Tests

- OTIS ENGINEERING
110 Wright Avenue
Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1R6
469-5500

Radio

- ATLANTIC EXPLORATION SERVICES LIMITED
92 Ochterloney Street
Dartmouth, Nova Scotia B2Y 1C5
463-0176

Safety

- SURVIVAL SYSTEMS LTD.
34 Queen Street
Dartmouth, Nova Scotia B2Y 1E7
463-0657 or 466-7770

Weather

- NORDCO LTD.
P.O. Box 8883
St. John's, Newfoundland A1B 3T2
(709) 364-1200

Wellsite

- D'EON MILLER AND ASSOCIATES LTD.
1657 Barrington Street, Suite 416
Halifax, Nova Scotia B3J 2A1
422-4006

06/04/84

* INDUSTRIAL BENEFITS OFFICE
new telephone # 424-4730

C H A N G E S

HOME OIL COMPANY LIMITED

Major Contractors

Catering
(Add)

Marican Offshore Drilling Inc.
9th Floor, Centennial Building
1660 Hollis Street
Halifax, Nova Scotia B3J 1V8
Telephone: 421-1123

Supply Vessels
(Add)

Balder Offshore Canada Inc.
1525 Birmingham Street
P.O. Box 3550 South
Halifax, Nova Scotia B3J 3J3
Telephone: 429-5680
Vessel: Balder Borkum

(Add)

Crosbie Offshore Services
1000 Windmill Road, Suite 7
Mall I, Burnside Industrial Park
Dartmouth, Nova Scotia B3B 1L7
Telephone: 465-2403
Vessel: Kaubteum

HUSKY/BOW VALLEY EAST COAST PROJECT

Major Contractors

Drilling Rigs
(Add)

Rowan Gorilla (Jack-up)

Rowan Companies, Inc.
277 Pleasant Street, Suite 307
Dartmouth, Nova Scotia B2Y 4B7
Telephone: 469-1973
Mr. George McClocklin, Rig Manager
Mr. Robert M. Hattie, Materials Manager

Catering
(Add)

Maple Leaf Catering Limited
P.O. Box 877, Station M
Halifax, Nova Scotia B3J 2W1
Telephone: 429-0856

(Delete)

TAP Catering Inc.

MOBIL OIL CANADA, LTD.

Major Contractors

Drilling Rigs

(Delete) Rowan Juneau (Jack-up)

(Delete) John Shaw (Semi-submersible)

Catering

(Delete) Universal Services Inc.

Supply Vessels

(Delete) Sable Offshore Services

(Add) Wimpey Sable Marine Ltd.
1459 Hollis Street
Halifax, Noav Scotia B3J 1V1
Telephone: 421-1459

PETRO-CANADA

Major Contractors

Drilling Rig Mr. Rick Smith replaces Ted Myers as Area Manager

Catering

(Add) Maple Leaf Catering Limited
P.O. Box 877, Station M
Halifax, Nova Scotia B3J 2W1
Telephone: 429-0856

(Delete) TAP Catering Inc.

ADDITIONAL OIL & GAS EXPLORATION COMPANY

Canterra Energy Ltd.
P.O. Box 1051
Calgary, ALberta T2P 2K7
Telephone: (403) 267-9440

Mr. Bill Nicholls
Mr. H. Isaak

TRANSMISSION PIPELINE COMPANY

Sable Gas Systems Ltd.
P.O. Box 462, Station 'M'
Halifax, Nova Scotia B3J 2P8
Telephone: 421-3103

Mr. Kirk D. Higgins, Administration Assistant